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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,065	11/24/2003	Johannes Catharinus Hubertus Mulkens	1857.5270004	9148

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EXAMINER	
KIM, PETER B	
ART UNIT	**PAPER NUMBER**
2851	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/719,065	HUBERTUS MULKENS ET AL.	
	Examiner	Art Unit	
	Peter B. Kim	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-55 and 62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-55 and 62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/866,875.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments filed on June 11, 2008 have been fully considered. In response to applicant's arguments, the rejection has been modified and thus, the finality of the previous office action is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9, 13-17, 20-22, 24, 25, and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiozawa (JP 11-354409).

Regarding claims 1, 2, 6, 7, 13, 14, 24, 25, and 62, Shiozawa discloses, discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system (1) providing radiation comprising a wavelengths less than 365 nm (para 0025) in evacuated path (Fig. 1) a support structure (not shown) for supporting a patterning structure (11), a substrate table (15), a projection system (12) and a radiation absorber comprising a gas supply to supply an absorbent gas at a controlled concentration (Fig. 3, 5, and abstract) to absorb radiation during exposure of the radiation sensitive material to the patterned beam to adjust one of: radiation power emitted by a radiation source configured to supply radiation to the radiation system; the uniformity of energy of the beam of radiation perpendicular to an optical axis of the apparatus; radiation energy of pulses of radiation emitted by the radiation source; duration of an exposure of a target portion; and angular distribution of the radiation energy delivered by the

beam of radiation (Fig. 1, and 3, abstract, and para 0037, 0038); and the absorbent gas comprising oxygen (abstract) or water (para 0073, 0074, humidity), mixed with purge gas (abstract), and the detector (16, 17), which detects ultraviolet light (para 0025). Shiozawa discloses radiation-energy detector to determine energy of radiation passing through a region of interactive gas (16, 17, para 0057). Shiozawa discloses a concentration controlled volume of radiation absorbent gas to be traversed by the beam of radiation (abstract). Shiozawa supplies and controls absorbent gas to effect a desired non-uniform attenuation (abstract). Shiozawa discloses a gas concentration in a path of hte beam of radiation that is controllably non-uniform in an obstructed plane perpendicular to an optical axis of the radiation system, or the projection system, or both (Fig. 3 and 5 and abstract). Shiozawa discloses in the abstract that because the absorbed amounts of fluxes are different for the left, the middle and the right of the enclosure 10b, the gas concentration is changed or controllably non-uniform in an unobstructed plane (the plane below the transmission member 10d, the plane is unobstructed from the left of the enclosure to the right, to offset the uneven illuminance. Shiozawa also discloses in para 0060-0065, the mixture of gas consists of plurality of gases, nitrogen and oxygen, and Shiozawa discloses supplying a plurality of gasses at controlled concentration (para 0063, 0064)

Regarding claims 3, 17 and 19, Shiozawa discloses the radiation absorber located proximate one of a pupil plane, a plane of patterning structure, a plane of the substrate; a conjugate plane of the pupil plane; a conjugate plane of the patterning structure plane; and a conjugate plane of the substrate plane (Fig. 1, 3, 5, abstract). Regarding claim 4, Shiozawa discloses absorber comprising an enclosure surrounding at least one volume and transparent to beam of radiation (Fig. 1, 3, 5, abstract). Regarding claim 5, the projection system of Shiozawa

discloses a first aperture to allow radiation to enter and a second aperture to allow radiation to exit (Fig. 1, 3, 5 abstract). Regarding claim 9, Shiozawa teaches gas extractor (Fig. 3, 5, para 0060-0062). Regarding claim 15 and 16, since any gas in an enclosure will eventually reach equilibrium in concentration, the concentration of the gas in 822 would be symmetric about the optical axis. Regarding claims 21 and 22, Shiozawa discloses controlling one of the properties of the absorbent gas by controlling the gas pressure and composition (para 0037, 0038).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-34, 36, 39, 41, 43, 44, 47, 48, and 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi (6,545,746) in view of Ishihara et al. (Ishihara) (6,240,610).

Regarding claims 26, 28, 34, 47, 48, 52-54 and 55, Nishi discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system (111) a support structure (112) for supporting a patterning structure, a substrate table (114), a projection system (113) and a radiation absorber comprising a gas supply to supply an absorbent gas at a controlled concentration in the evacuated optical path (col. 35, line 56 – col. 36, line 47), the absorbent gas absorbing radiation energy by increasing gas pressure (col. 35, line 56 – col. 36, line 47) to absorb radiation during exposure of the radiation sensitive material to the patterned

beam to adjust one of: radiation power emitted by a radiation source configured to supply radiation to the radiation system; the uniformity of energy of the beam of radiation perpendicular to an optical axis of the apparatus; radiation energy of pulses of radiation emitted by the radiation source; duration of an exposure of a target portion; angular distribution of the radiation energy delivered by the beam of radiation (col. 35, line 55-60) and a radiation energy sensor or detector (Fig. 1, ref. 9, and Fig. 8, ref. 30, "The relationship between the detection signal and the amount of exposure light applied to the surface of a wafer has previously been measured and stored. The exposure controller 1 monitors the integral of the amount of exposure light applied to the surface of the wafer from the detection signal." col. 14, lines 52-67. "monitoring the reflectivity of the wafer W based on the amount of light reflected by the fiducial mark member FM" col. 29, lines 55-67.) wherein the detector is located out of the path of the beam of radiation (Fig. 1 and 8) and proximate one of: a pupil plane of the projection system, a conjugate plane of the pupil plane, a plane of the substrate, a plane of the patterning structure, a conjugate plane of the patterning structure or a conjugate plane of the substrate plane (Fig. 1, Fig. 8, ref. 30).

Regarding claims 27, 41 and 43, Nishi discloses the radiation-energy detector or sensor located proximate one of a pupil plane, a plane of patterning structure, a plane of the substrate; a conjugate plane of the pupil plane; a conjugate plane of the patterning structure plane; and a conjugate plane of the substrate plane (Fig. 1 and 8, col. 17, lines 32-42, col. 28, lines 8-14). Regarding claim 31, Nishi discloses the radiation-energy detector comprising an enclosure surrounding at least one volume and transparent to beam of radiation (Fig. 8 and 9, col. 28, lines 9-65, col. 32, line 46 – col. 34, line 60). Regarding claims 32 and 33, the projection system of

Nishi discloses a first aperture to allow radiation to enter and a second aperture to allow radiation to exit (Fig. 8, 9, 12 and 13) and the absorption by gas is substantially located at the focal point (col. 32, line 46 – col. 34, line 60, col. 35, line 56 – col. 36, line 47). Regarding claim 36, Nishi also teaches gas extractor (Fig. 9, col. 35, line 56 – col. 36, line 47). Since any gas in an enclosure will eventually reach equilibrium in concentration, the concentration of the gas in Nishi would be symmetric about the optical axis. Nishi also discloses controlling one of the properties of the absorbent gas (col. 36, lines 1-43).

Regarding claims 29, 30, 39 and 44, Nishi discloses the absorbent gas comprising oxygen, helium and nitrogen (col. 36, lines 44-46, col. 45, lines 17-42), mixed with purge gas (col. 45, lines 17-67), and radiation comprising wavelength less than 365 nm (KrF and ArFcol. 14, lines 6-20), and the detector, which detects ultraviolet light. Nishi discloses radiation-energy detector to determine energy of radiation passing through a region of interactive gas (col. 35, line 56 – col. 36, line 47, in order to control the control the amount of light and to obtain desirable amount, a detector must be provided, thus such detector is inherent to the invention of Nishi). Nishi discloses a concentration controlled volume of radiation absorbent gas to be traversed by the beam of radiation (col. 35, line 56- col. 36, line 47, and col. 45, lines 17-67). Nishi supplies and controls absorbent gas to effect a desired non-uniform attenuation (col. 35, line 56- col. 63, line 47, and col. 45, lines 17-67). Nishi discloses a device (w) manufactured according to the method above.

Although Nishi does not disclose explicitly that the sensor or the detector (9, 30) measures the amount of interaction of the beam of radiation with the region of gas, since Nishi discloses controlling the radiation by controlling the gas which absorbs the radiation, it would be

obvious to one of ordinary skill in the art that the radiation detected by the sensor (9, 30) would provide an output that is proportional to an mount of interaction of the beam of radiation with the region of the gas.

However, Nishi does not disclose measuring particles scattered from a path of the beam of radiation due to the interaction of the beam with the interactive gas. Ishihara discloses a scattered beam detector (18) which measures the value of the scattered beam intensity (col. 7, line 63—col. 8, line 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the scattered beam detector of Ishihara to the invention of Nishi in order to determine the concentration of gas and/or contaminants and the intensity of the scattered beam, which is the amount of the interaction of the beam with the gas.

Claims 26, 27, 30, 52, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (Mori) (2001/0030740) in view of Ishihara et al. (Ishihara).

Mori discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system with wavelength less than 365 nm (10 and para 0044) a support structure (107) for supporting a patterning structure (20), a substrate table (23), a projection system (21) and a radiation-energy detector or sensor (44a, col. 9, line 35 – col. 10, line 16) out of a path of the beam of radiation, proximate one of: a pupil plane of the projection system, a conjugate plane of the pupil plane, a plane of the substrate, a plane of the patterning structure, a conjugate plane of the patterning structure or a conjugate plane of the substrate plane (Fig. 2). Although Mori does not disclose explicitly that the sensor (44a) measures and outputs a signal that is proportional to an amount of interaction of the projection beam with the absorbent gas

since Mori discloses in para 0081 that there is inert gas inside the projection system and there is some absorption of illumination light with inert gas, it would be obvious to one of ordinary skill in the art that the illumination detected by the sensor (44) would provide an output that is proportional to an mount of interaction of the beam of radiation with the region of the gas. However, Mori does not disclose measuring particles scattered from a path of the beam of radiation due to the interaction of the beam with the interactive gas. Ishihara discloses a scattered beam detector (18) which measures the value of the scattered beam intensity (col. 7, line 63—col. 8, line 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the scattered beam detector of Ishihara to the invention of Mori in order to determine the concentration of gas and/or contaminants and the intensity of the scattered beam, which is the amount of the interaction of the beam with the gas.

Claims 26-34, 36-39, 41, 43, 44, 47, 48, and 50-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiozawa (JP-11-354409) in view of Ishihara et al. (Ishihara).

Regarding claims 26, 28, 34, 47, 48, and 50-55, Shiozawa discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system (1) a support structure (not shown) for supporting a patterning structure (11), a substrate table (15), a projection system (12) and a radiation absorber comprising a gas supply to supply an absorbent gas at a controlled concentration in the evacuated optical path (Fig. 3, 5 and abstract), the absorbent gas absorbing radiation energy by increasing gas pressure (para 0057) to absorb radiation during exposure of the radiation sensitive material to the patterned beam to adjust one of: radiation power emitted by a radiation source configured to supply radiation to the radiation

system; the uniformity of energy of the beam of radiation perpendicular to an optical axis of the apparatus; radiation energy of pulses of radiation emitted by the radiation source; duration of an exposure of a target portion; angular distribution of the radiation energy delivered by the beam of radiation (Fig. 1, 3, abstract, and para 0037, 0038); and a radiation-energy detector or sensor (17) out of a path of the beam of radiation, proximate to the enclosure providing an output signal and energy profile that is proportional to an amount of interaction of the projection beam with the absorbent gas (para 0057, abstract).

Regarding claims 27, 41 and 43, Shiozawa discloses the radiation-energy detector or sensor located proximate one of a pupil plane, a plane of patterning structure, a plane of the substrate; a conjugate plane of the pupil plane; a conjugate plane of the patterning structure plane; and a conjugate plane of the substrate plane (Fig. 1, para 0057). Regarding claim 31, Shiozawa discloses the radiation-energy detector comprising an enclosure surrounding at least one volume and transparent to beam of radiation (Fig. 1, 3, 5 and abstract). Regarding claims 32 and 33, the projection system of Shiozawa discloses a first aperture to allow radiation to enter and a second aperture to allow radiation to exit (Fig. 1) and the absorption by gas is substantially located at the focal point (Fig. 1, 3, 5, abstract and para 0060-0062). Regarding claim 36, Shiozawa also teaches gas extractor (Fig. 3, 5, para 0060-0062). Since any gas in an enclosure will eventually reach equilibrium in concentration, the concentration of the gas in Shiozawa would be symmetric about the optical axis. Shiozawa also discloses controlling one of the property of the absorbent gas by controlling the gas pressure and composition (para 0037, 0038).

Regarding claims 29, 30, 39 and 44, Shiozawa discloses the absorbent gas comprising oxygen (abstract), mixed with purge gas (abstract), and radiation comprising wavelength less

than 365 nm (para 0025), and the detector (17), which detects ultraviolet light. Shiozawa discloses radiation-energy detector to determine energy of radiation passing through a region of interactive gas (para 0057). Shiozawa discloses a concentration controlled volume of radiation absorbent gas to be traversed by the beam of radiation (Fig. 1, abstract). Shiozawa supplies and controls absorbent gas to effect a desired non-uniform attenuation (abstract). Shiozawa discloses a device (13) manufactured according to the method above.

Regarding claims 37 and 38, Shiozawa discloses the claimed invention as discussed above. Shiozawa does not disclose that the gas enters the enclosure at a speed ten times the speed of sound. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide the gas at a speed ten times the speed of sound since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Although Shiozawa does not disclose explicitly that the sensor or the detector (17) measures the amount of interaction of the beam of radiation with the region of gas, since Shiozawa discloses controlling the radiation by controlling the gas which absorbs the radiation, it would be obvious to one of ordinary skill in the art that the radiation detected by the sensor (17) would provide an output that is proportional to an mount of interaction of the beam of radiation with the region of the gas.

However, Shiozawa does not disclose measuring particles scattered from a path of the beam of radiation due to the interaction of the beam with the interactive gas. Ishihara discloses a scattered beam detector (18) which measures the value of the scattered beam intensity (col. 7, line 63—col. 8, line 58). Therefore, it would have been obvious to one of ordinary skill in the art

at the time of the invention to provide the scattered beam detector of Ishihara to the invention of Shiozawa in order to determine the concentration of gas and/or contaminants and the intensity of the scattered beam, which is the amount of the interaction of the beam with the gas.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi as applied to claim 26 above, and further in view of Tanaka et al. (Tanaka) (2003/0020888).

The further difference between the claimed invention and the modified Nishi is the radiation in the rage of 5-20 nm and a detector to detect such radiation. Tanaka discloses providing EUV light to a lithographic apparatus (para 0187). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide EUV light and a detector to detect such light to the invention of Nishi in order to improve the resolution of the exposed pattern.

Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi as applied to claim 26 above, and further in view of Kley (6,353,219).

The further difference between the claimed invention and the modified Nishi is the sensor comprises an electrode which is charged at a potential opposite to a charged particle to which it is sensitive. Kley discloses in col. 53, lines 31-56, a radiation energy sensor including an electrode and sensitive to a charged particle which is opposite in sign. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the sensor of Kley to the invention of Nishi in order to facilitate analysis of the output signal through the controller as taught by Kley in col. 53, lines 15-30.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiozawa (JP 11-354409).

Shiozawa discloses the claimed invention as discussed above; however, regarding claims 10 and 11, Shiozawa does not disclose that the gas enters the enclosure at a speed ten times the speed of sound. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide the gas at a speed ten times the speed of sound since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7, 9, 13, 15-19, 21-25, and 62 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims1-3 and 5-23 of U.S. Patent No. 6,538,716 ("716"). Although the conflicting claims are not identical, they are not patentably

distinct from each other because the current claims are broader and thus fully met by the prior patent. For example, 716 also claims a gas composition sensor which is not claimed in the current claims.

Claims 8, 14, 30 and 35 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 7, and 19 of U.S. Patent No. 6,538,716 (716) in view of Tanaka et al. (Tanaka). As indicated above 716 claims to an invention not patentably distinct from the current claims; however, 716 does not claim radiation in the rage of 5-20 nm and in the range of less than 365 nm and a detector to detect such radiation. Tanaka discloses providing EUV light and ArF and KrF laser to a lithographic apparatus (para 0187). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide EUV light and ArF and KrF a detector to detect such light to the claims of 716 in order to improve the resolution of the exposed pattern.

Claims 26, 29, 31-34, 36, 39-40-43, 47-49, and 50-55 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, and 5-23 of U.S. Patent No. 6,538,716 ("716") in view of Mori et al. (Mori) and Ishihara et al. (Ishihara). As indicated above 716 claims to an invention not patentably distinct from the current claims; however, 716 does not claim measuring the radiation out of the path of the beam. Mori discloses in Fig. 2, the detector (44a) which is located out of the path of the beam. Ishihara discloses a scattered beam detector (18) which measures the value of the scattered beam intensity (col. 7, line 63—col. 8, line 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to measure the light transmittance in real-time as taught by Mori and to provide the scattered beam detector of Ishihara to the invention of Shiozawa in order to

determine the concentration of gas and/or contaminants and the intensity of the scattered beam, which is the amount of the interaction of the beam with the gas.

Response to Arguments

Applicant argues that the cited references do not disclose the radiation which is controllably non-uniform in an unobstructed plane perpendicular to the optical axis and supplying a plurality of gasses at controlled concentrations. The examiner respectfully disagrees as indicated in the rejection above. Further, Applicant argues that the cited reference do not disclose measuring particles scattered from the path of the beam due to the interaction of gas and the radiation. In response Ishihara reference is included to show the teaching of measuring scattered particles.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/
Primary Examiner, Art Unit 2851

August 24, 2008